Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An inhibitor of histone deacetylase represented by formula (1):

$$Cy\text{-}X\text{-}Y^1\text{-}W \qquad (1)$$

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

X is selected from the group consisting of C=O, $C=CH_2$, CH(OH), $CH(OR^1)$, C=N(OH), and $C=N(OR^1)$, where R^1 is alkyl, aryl, aralkyl, or acyl;

Y^1 is a C_3-C_7 alkylene, wherein said alkylene may be optionally ~~optinally~~ substituted, and wherein one or two carbon atoms in the alkylene chain connecting X and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen ~~hybrogen~~, alkyl, aryl, aralkyl, acyl, alkoxycarbonyl, or carbamoyl ~~caramoyl~~, and n is 0, 1, or 2, provided that the atoms in Y^1 that are attached to X and W are carbon atoms, and further provided that Y^1 is not an ester or amide linkage in the linear chain connecting X and W; and

W is selected from the group consisting of $-C(O)\text{-}CH_2\text{-}SR^2$, -C(O)-NH-OM,-NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen or a pharmaceutically acceptable cation;

and Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy.

2. (Cancelled)

3. (Previously Presented) The inhibitor of claim 1, wherein the heterocyclic moiety is substituted by one or two substituents independently selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_6—C_{10} aryl, heteroaryl, heterocyclyl, (C_6-C_{10})ar(C_1-C_6)alkyl, halo, nitro, hydroxy, c_1-C_6 alkoxy, C_6-C_{10} aryloxy, heteroaryloxy, C_1-C_6 alkoxycarbonyl, C_6-C_{10} aryloxycarbonyl, heteroaryloxycarbonyl, carboxy, and amino.

4. (Cancelled)

5. (Cancelled)

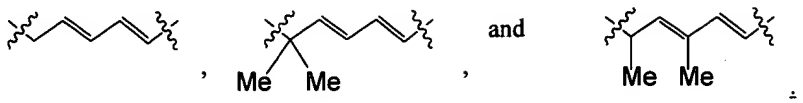
6. (Original) The inhibitor of claim 1, where X is selected from the group consisting of CH(OR^1), C=N(OH), and C=N(OR^1), where R^1 is C_1-C_6 alkyl, C_6-C_{10} aryl, or (C_6-C_{10})ar(C_1-C_6)alkyl.

7. (Previously Presented) The inhibitor of claim 1, wherein one to three carbon atoms of the alkylene are independently substituted with halo, oxo, oximino, nitro, haloalkyl, alkyl, aralkyl, alkoxy, aryloxy, alkoxycarbonyl, carboxy, hydroxyalkyl, acyl, acyloxy, or cyano.

8. (Previously Presented) The inhibitor of claim 1, wherein Y^1 is an all carbon linear chain connecting X and W.

9. (Previously Presented) The inhibitor of claim 8, wherein the linear chain connecting X and W is a dienyl moiety, wherein the dienyl moiety is attached to W.

10. (Previously Presented) The inhibitor of claim 9, wherein Y^1 is selected from the group consisting of



11. (Original) The inhibitor of claim 8, wherein Y^1 is $-(CH_2)_m$, where m is 5, 6, or 7.

12. (Original) The inhibitor of claim 1, wherein one carbon atom in the linear chain connecting X and W is replaced with O, NR^3, or $S(O)_n$.

13. (Original) The inhibitor of claim 12, wherein Y^1 is $-(CH_2)-S(O)_n-(CH_2)_p$, where n is 0, 1, or 2, and p is 3, 4, or 5.

14. (Original) The inhibitor of claim 1, wherein W is –C(O)-NH-OM, M being selected from the group consisting of hydrogen, sodium, potassium, magnesium, and calcium.

15. (Original) The inhibitor of claim 1, wherein W is –C(O)-NH-Z or NH-C(O)–NH-Z, Z being unsubstituted 2-anilinyl or unsubstituted 2-pyridyl.

16. (Original) The inhibitor of claim 1, wherein W is $-C(O)-CH_2-SR^2$, R^2 being selected from the group consisting of C_1-C_6 alkyl, C_6-C_{10} aryl, (C_6-C_{10})ar(C_1-C_6)alkyl, (C_1-C_6 alkyl)Carbonyl, (C_6-C_{10} aryl)carbonyl, and ((C_6-C_{10})ar(C_1-C_6)alkyl)carbonyl, wherein the aryl portion of any such groups may be optionally substituted.

17. (Original) The inhibitor of claim 16, wherein R^2 is selected from the group consisting of methyl, phenyl, benzyl, benzoyl, and acetyl.

18. (Currently Amended) An inhibitor of histone deacetylase represented by formula (2):

$$Cy\text{-}Y^2\text{-}W \qquad (2)$$

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

Y^2 is C_5-C_7 alkylene, wherein said alkylene maybe optionally substituted, and wherein one or two carbon atoms in the alkylene chain connecting CY and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen, alkyl, aryl, aralkyl ~~arakyl~~, acyl, alkoxycarbonyl, or carbamoyl, and n is 0, 1, or 2, provided that Y^2 is not an ester or amide linkage in the linear chain connecting Cy and W; and

W is selected from the group consisting of $-C(O)-CH_2-SR^2$,-NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted; and

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinymethyl, or pyridylmethyl ~~pyridymehtyl~~, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy.

19. (Cancelled)

20. (Previously Presented) The inhibitor of claim 18, wherein the heterocyclic moiety is substituted by one or two substituents independently selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_6-C_{10} aryl, heteroaryl, heterocyclyl, (C_6-C_{10})ar(C_1-C_6)alkyl, halo, nitro, hydroxyl, C_1-C_6 alkoxy, C_6-C_{10} aryloxy, heteroaryloxy, C_1-C_6 alkoxycarbonyl, C_6-C_{10} aryloxycarbonyl, heteroaryloxycarbonyl, carboxy, and amino.

21. (Cancelled)

22. (Cancelled)

23. (Previously Presented) The inhibitor of claim 18, wherein one to four carbon atoms of the alkylene are independently substituted with halo, oxo, oximino, nitro, haloalkyl, alkyl, aralkyl, alkoxy, aryloxy, alkoxycarbonyl, carboxy, hydroxyalkyl, acyl, acyloxy, or cyano.

24. (Original) The inhibitor of claim 18, wherein one carbon atom in the linear chain connecting Cy and W is replaced with O, NR^3, or $S(O)_n$.

25. (Previously Presented) The inhibitor of claim 18, wherein one carbon atom in the linear chain connecting Cy and W is replaced with NR^3, where R^3 is selected from the group consisting of C_1-C_6 alkyl, C_6-C_{10} aryl, (C_6-C_{10})ar(C_1-C_6)alkyl, (C_1-C_6alkyl) oxycarbonyl, (C_6-C_{10} aryl)oxycarbonyl, ((C_6-C_{10})ar(C_1-C_6)alkyl)oxycarbonyl, (C_1-C_6 alkyl)carbonyl, (C_6-C_{10} aryl)carbonyl, and ((C_6-C_{10})ar(C_1-C_6)alkyl)carbonyl.

26. (Original) The inhibitor of claim 18, wherein one or two carbon atoms in the linear chain connecting Cy and W are replaced by O.

27. (Original) The inhibitor of claim 18, wherein W is –C(O)-NH-Z or –NH-C(O)-NH-Z, Z being unsubstituted 2-anilinyl or unsubstituted 2-pyridyl.

28. (Original) The inhibitor of claim 18, wherein W is $-C(O)-CH_2-SR^2$, R^2 being selected from the group consisting of C_1-C_6 alkyl, C_6-C_{10} aryl, (C_6-C_{10})ar(C_1-C_6)alkyl, (C_1-C_6 alkyl)carbonyl, (C_6-C_{10} aryl)carbonyl, and ((C_6-C_{10})ar(C_1-C_6)alkyl)carbonyl, wherein the aryl portion of any such groups may be optionally substituted.

29. (Original) The inhibitor of claim 28, wherein R^2 is selected from the group consisting of methyl, phenyl, benzyl, benzoyl, and acetyl.

30. (Currently Amended) An inhibitor of histone deacetylase represented by formula (3):

$$Cy\text{-}S(O)_2\text{-}NH\text{-}Y^3\text{-}W \qquad (3)$$

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

Y^3 is C_2-C_6 alkylene, wherein said alkylene may be optionally substituted with one or more substituents independently selected from the group consisting of halo, hydroxyl, oxo, nitro, haloalkyl, alkyl, aralkyl, alkoxy, aryloxy, carboxy, hydroxyalkyl, acyl, acyloxy, and cyano; and

W is selected from the group consisting of –C(O)-CH_2-SR^2, -C(O)-NH-OM,-NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen; or a pharmaceutically acceptable cation

Z is selected from the group consisting ~~consisitng~~ of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4, alkyl, or C_1-C_4 alkoxy;

provided that Z does not have the formula –(C_5H_3N)-NHC(O)-Y^3-NH-S(O)$_2$-Cy

or a pharmaceutically acceptable salt thereof ~~therof~~.

31. (Cancelled)

32. (Previously Presented) The inhibitor of claim 30, wherein the aryl or heterocyclic moiety is substituted by one or two substituents independently selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_6-C_{10} aryl, heteroaryl, heterocyclyl, (C_6-C_{10})ar(C_1-C_6)alkyl, halo, nitro, hydroxyl, C_1-C_6 alkoxy, C_6-C_{10}

aryloxy, heteroaryloxy, C_1-C_6 alkoxycarbonyl, C_6-C_{10} aryloxycarbonyl, heteroaryloxycarbonyl, carboxy, and amino.

33. (Cancelled)

34. (Cancelled)

35. (Currently Amended) The inhibitor of claim 30, wherein Y^3 is a C_2-C_6 alkylene optionally substituted with one or two non-hydrogen substituents independently selected from the group consisting of halo, hydroxyl, oxo, nitro, $(halo)_{1-5}(C_1$-$C_3)$alkyl, C_1-C_6 alkyl, $(C_6$-$C_{10})ar(C_1$-$C_6)$alkyl, C_1-C_6 alkoxy, C_6-C_{10} aryloxy ~~arloxy~~, carboxy, hydroxy $(C_1$-$C_6)$alkyl, C_1-C_6 alkylcarbonyl, C_6-C_{10} arylcarbonyl, C_1-C_6 alkylcarbonyloxy ~~alkylcarbonykloxy~~, C_6-C_{10} arylcarbonyloxy, and cyano.

36. (Previously Presented) The inhibitor of claim 30, wherein Y^3 is an optionally substituted saturated C_4-C_5 alkylene.

37. (Original) The inhibitor of claim 30, wherein W is –C(O)-NH-OM, M being selected from the group consisting of hydrogen, sodium, potassium, magnesium, and calcium.

38. (Original) The inhibitor of claim 30, wherein W is –C(O)-NH-Z or –NH-C(O)-NH-Z, Z being unsubstituted 2-anilinyl or unsubstituted 2-pyridyl.

39. (Original) The inhibitor of claim 30, where W is $–C(O)-CH_2-SR^2$, R^2 being selected from the group consisting of C_1-C_6 alkyl, C_6-C_{10} aryl, $(C_6$-$C_{10})ar(C_1$-$C_6)$alkyl, $(C_1$-C_6 alkyl)carbonyl, $(C_6$-C_{10} aryl)carbonyl, and $((C_6$-$C_{10})ar(C_1$-$C_6)$alkyl)carbonyl, wherein the aryl portion of any such groups may be optionally substituted.

40. (Cancelled)

41. (Cancelled)

42. (Currently Amended) A pharmaceutical composition comprising an inhibitor of histone deacetylase represented by formula (1):

$$Cy\text{-}X\text{-}Y^1\text{-}W \qquad (1)$$

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

X is selected from the group consisting of C=O, $C{=}CH_2$, CH(OH), $CH(OR^1)$, C=N(OH), and $C{=}N(OR^1)$, where R^1 is alkyl, aryl, aralkyl, or acyl;

Y^1 is a C_3-C_7 alkylene, wherein said alkylene may be optionally substituted, and wherein one or two carbon atoms in the alkylene chain connecting X and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen, alkyl, aryl, aralkyl, acyl, alkoxycarbonyl, or carbamoyl, and n is 0, 1, or 2, provided that the atoms in Y^1 that are attached to X and to W are carbon atoms, and further provided that Y^1 does not comprise an ester or amide linkage in the linear chain connecting X and W; and

W is selected from the group consisting of $-C(O)\text{-}CH_2\text{-}SR^2$,-C(O)-NH-OM,-NH-C(O)-NH-Z, and –C(O)-NH-Z, where R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen or a pharmaceutically acceptable cation;

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl ~~pyridymethyl~~, any of which group optionally ~~gropus ooptionally~~ may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy; and

a pharmaceutically acceptable carrier, excipient, or diluent.

43. (Currently Amended) A pharmaceutical composition comprising an inhibitor of histone deacetylase represented by formula (2):

$$Cy\text{-}Y^2\text{-}W \qquad (2)$$

wherein

Cy is heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

Y^2 is C_5-C_7 alkylene, wherein said alkylene may be optionally substituted, and wherein one or two carbon atoms in the alkylene chain connecting Cy and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen, alkyl, aryl, aralkyl, acyl, alkoxycarbonyl, or carbamoyl, and n is 0, 1, or 2, provided that Y^2 is not an ester or amide linkage in the linear chain connecting Cy and W; and

W is selected from the group consisting of $-C(O)\text{-}CH_2\text{-}SR^2$, -NH-C(O)-NH-Z, and –C(O)-NH-Z, where R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted; and

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy; and a pharmaceutically acceptable carrier, excipient, or diluent.

44. (Currently Amended) A pharmaceutical composition comprising an inhibitor of histone deacetylase represented by formula (3):

$$Cy\text{-}S(O)_2\text{-}NH\text{-}Y^3\text{-}W \qquad (3)$$

wherein

Cy is a heterocyclic ~~heterocyclic~~ moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

Y^3 is C_2-C_6 alkylene, wherein said alkylene may be optionally substituted with one or more substituents independently selected from the group consisting of halo, hydroxyl, oxo, nitro, haloalkyl, alkyl, aralkyl, alkoxy, aryloxy, carboxy, hydroxyalkyl, acyl, acyloxy, and cyano; and

W is selected from the group consisting of –C(O)-CH_2-SR^2,-C(O)-NH-OM,-NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen or a pharmaceutically acceptable cation; and

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl ~~anilinylmehtyl~~, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy; and

a pharmaceutically acceptable carrier, excipient, or diluent.

provided that Z does not have the formula –C_5H_3N)-NHC(O)-Y^3-NH-$S(O)_2$-Cy.

45. (Cancelled)

46. (Cancelled)

47. (Previously Presented) A method of inhibiting histone deacetylase in a cell, comprising contacting a cell in which inhibition of histone deacetylase is desired with an inhibitor of histone deacetylase represented by formula (1):

Cy-X-Y^1-W (1)

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

X is selected from the group consisting of C=O, C-CH_2, CH(OH), CH(OR^1), C=N(OH), and C=N(OR^1), where R^1 is alkyl, aryl, aralkyl, or acyl;

Y^1 is a C_3-C_7 alkylene, wherein said alkylene may be optionally substituted, and wherein one or two carbon atoms in the alkylene chain connecting X and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen, alkyl, aryl, aralkyl, acyl, alkoxycarbonyl, or carbamoyl, and n is 0, 1, or 2, provided that the atoms in Y^1 that are attached to X and W are carbon atoms, and further provided that Y^1 is not an ester or amide linkage in the linear chain connecting X and W; and

W is selected from the group consisting of –C(O)-CH_2-SR^2-C(O)-NH-OM, -NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen or a pharmaceutically acceptable cation;

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy.

48. (Currently Amended) A method of inhibiting histone deacetylase in a cell, comprising contacting a cell in which inhibition of histone deacetylase is desired with an inhibitor of histone deacetylase represented by formula (2):

Cy-Y^2-W (2)

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally substituted;

Y^2 is C_5-C_7 alkylene, wherein said alkylene may be optionally substituted, and wherein one or two carbon atoms in the alkylene chain connecting Cy and W may be replaced with O, NR^3, or $S(O)_n$, where R^3 is hydrogen, alkyl, aryl, aralkyl, acyl, alkoxycarbonyl ~~alkoxybearbonyl~~, or carbamoyl, and n is 0, 1, or 2, provided that Y^2 is not an ester or amide linkage in the linear chain connecting Cy and W; and

W is selected from the group consisting of $-C(O)-CH_2SR^2$, -NH-C(O)-NH-Z, and –C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted; and

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl ~~anilinymethyl~~, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C^1-C^4 alkyl, or C_1-C_4 alkoxy.

49. (Currently Amended) A method of inhibiting histone deacetylase in a cell, comprising contacting a cell in which inhibition of histone deacetylase is desired with an inhibitor of histone deacetylase represented by formula (3):

$$Cy\text{-}S(O)_2\text{-}NH\text{-}Y^3\text{-}W \qquad (3)$$

wherein

Cy is a heterocyclic moiety selected from the group consisting of furan, benzofuran, thiophene and benzothiophene, any of which may be optionally

substituted~~, provided that Cy is other than dimethylaminoaphthyl when Y^3 is $(CH_2)_3$~~;

Y^3 is C_2-C_6 alkylene, wherein said alkylene may be optionally substituted with one or more substituents independently selected from the group consisting of halo, hydroxyl, oxo, nitro, haloalkyl, alkyl, aralkyl, alkoxy, aryloxy, carboxy, hydroxyalkyl, acyl, acyloxy, and cyano; and

W is selected from the group consisting of –C(O)-CH_2-SR^2, -C(O)-NH-OM,-NH-C(O)-NH-Z, and C(O)-NH-Z, where

R^2 is alkyl, aryl, aralkyl, or acyl, wherein the aryl portion of any such groups may be optionally substituted;

M is hydrogen or a pharmaceutically acceptable cation; and

Z is selected from the group consisting of anilinyl, pyridyl, thiazolyl, hydroxyphenyl, thiadiazolyl, anilinylmethyl, or pyridylmethyl, any of which groups optionally may be substituted with halo, hydroxyl, amino, nitro, C_1-C_4 alkyl, or C_1-C_4 alkoxy;

provided that Z does not have the formula –(C_5H_3N)-NHC(O)-Y^3-NH-$S(O)_2$-Cy.

Claims 50 - 56 (Canceled)

57. (Previously Presented) The inhibitor according to claim 1, wherein the cation is a monovalent or divalent cation.

58. (Previously Presented) The inhibitor according to claim 30, wherein the cation is a monovalent or divalent cation.

59. (Previously Presented) The pharmaceutical composition according to claim 42, wherein the cation is a monovalent or divalent cation.

60. (Previously Presented) The pharmaceutical composition according to claim 44, wherein the cation is a monovalent or divalent cation.

61. (Previously Presented) The method according to claim 47, wherein the cation is a monovalent or divalent cation.

62. (Previously Presented) The method according to claim 49, wherein the cation is a monovalent or divalent cation.